

A CASE STUDY OF IMPLEMENTATION OF SIX SIGMA TECHNIQUE

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Abstract : In present era of competition and industrial revolution the main problem is to come up with the latest situation and make some balance between this, all the types of institution and organization are trying to toughen the control of costs, and maintain very high level of productivity to meet the desire of customers and to regulate the variety of product with higher quality level. In the valuation of the view of this methodology Six Sigma is a very creative world level improvisement business control method that kick starts in the companies to use easy but powerful strategic steps. From the literature study, After days of research work the things which comes is that the six sigma strategy is only used in the big industries and small industries are not considered is applicable for this method or hard to recognize under this, cube type and medium manufacturing industries and in service as well as construction sector through Six Sigma application. In this present work, here I have started to look at the small business and tiny industries to full fill the sigma strategy after seeing the industrial demand small industries producing caliper house mountings for the automobile sector was selected as a case study for implementing Six Sigma to improve productivity levels. The company had a record of downgrading productivity levels on account of very high rejection rate of the mountings. This unique study aims to strongly highlighted the main changes comes after the productivity level indication as gear box production was earlier 4500 parts per second but after the implementation it rises the 29% of total output and about 6700 per second and the main thing which is in the notice is that the consumption of electricity was about 12000Amp/month as a uses but after the implementation the uses declined to the level of 910Amp/month and the defects go to the buffer stocks has also come down to the level of 20 tons per assignment to the 7 tones per assignment..

Keyword –six sigma ,implementation ,sigma ,production efficiency, liability, improvised.

I. INTRODUCTION

World is narrowing day by day with the preciseness and high levels of latest technology. The trust and wish of peoples and industrialists are growing. Globalization of market and domestic economy is become a worldwide interaction between the two world. However, the development and economic sustainability of any country is very much depends upon increase in productivity.

On the off chance that we characterize the expression of profitability level and by out coming, at that point it to as the proportion of the yield to the given info. The yield considered as the products that will be delivered (or then sold) and the given measure of info by and large incorporate the work, capital, material, vitality and so on. The idea involves that the capacity which is required in it is identified with profitability work. A straightforward business technique is to pick up and which might be financial or uneconomic, the substantial and elusive. Strategies and status of profitability tallying are basically the importance of the different interpretation and ideas of profound efficiency. The majority of the methodologies are concentric towards creation and efficiency work. An association has a few targets. These are not just as items to be fabricated and promoted, yet additionally incorporate the objective of limit usage, accomplishing the objective of productivity just as elusive destinations of consumer loyalty, worker fulfillment and cultural objectives. Assets are exhausted as contributions to accomplish these destinations. Subsequently the fundamental goal to present the six sigma at the little in

1.2 HISTORY

If we go back to the old time the six sigma has been conceived at the MOTOROLA company ,japan and productivity management as a system comprises of an organization structure, procedures, processes and resources to meet the productivity policy objectives. It is primarily designed to satisfy the internal managerial needs of the organization and therefore it may vary form one organization to another. Edosomwain (1987) redefined the theory and see the changes in working strategy after having so many failure results he implemented the complex system. Samantha (1984)

1.3 Productivity Management:

Productivity management calls for a considered, regular and officially ordered loom in forecast, deployment and usage of some resources to achieve system concert. It is called to systematically defining so as to identify areas for improvement with high level

of preciseness to monitor progress of implementation programs to achieve improvements in different areas of industrial interest.

There are six stages in the cycle of productivity management and these are (refer figure 1.1):

1. Rules
2. Organizational skilling
3. Counting with precise
4. Measurement and data evaluation
5. Change in strategy
6. Auditing

PRODUCTIVITY: CONCEPT

Efficiency is considered as the generally contended, yet least comprehended idea of the present administration framework period (Sink, 1985). Worry for 'efficiency the executives' is all up to inescapable and pervades all areas of most of society. National pioneers, open managers and civil servants find in improved profitability a panacea for all ills influencing the general public. It is examined that an unmistakable increment in efficiency of framework will create additional necessity and increment income and development,. Network pioneers discover profitability as a response for expanded work level.

Efficiency' freely depicts the relations, as a rule in proportion structure among yield and any or all the related information sources I genuine terms. Mali (1978) made a normal flight to characterize profitability as.

$$\begin{aligned} \text{PRODUCTIVITY INDEX} &= \frac{\text{final product obtained}}{\text{input}} \\ &= \frac{\text{Performance gained}}{\text{material given}} \\ &= \frac{\text{Effectiveness}}{\text{Efficiency}} \end{aligned}$$

$$\text{PRODUCTIVITY INDEX} = \frac{\text{Total performance}}{\text{Total inputs}}$$

$$\text{AND} \quad (\text{PI})_S = \sum W_u(\text{PI})_u$$

WHERE $(\text{PI})_S$ = productivity index of the system

And since input and output can be both tangibles and intangibles in different subsystems, it is difficult to use one single unit of measurement, so indirect approach is resorted to here,

$$\text{PI} = \frac{\text{A.O.}}{\text{T.O.}}$$

Where

PI = Productivity index

A.O. = Actual Output and

T.O. = Total Achievable Output

Productivity has evolved into a wider form at the enterprise level, it has come to cover all systems like production, marketing, technology, finance, material, human resources etc. Since the performance of all these systems affects each other. so no system can be evaluated in isolation for its productivity.

Whereas the concept of productivity in the present study has been narrowed down to improving quality with utilizing resources like labour and machine. So labour productivity levels and machine productivity levels have a direct influence on the capacity utilization levels in the industries and vice versa. Productivity may represent economic growth for planners but in the enterprise level, productivity and consumption is given as :

$$P = u.n.$$

$$= \frac{(T-t)}{T} \times \frac{s}{(T-t)}$$

Where, P = Productivity of labour

u = Utilizations op labour time

n = Efficiency of labour

T= Elapsed time in man-hours

T = Idle or unproductive time in man hours

S = Standard time accomplished in man hours

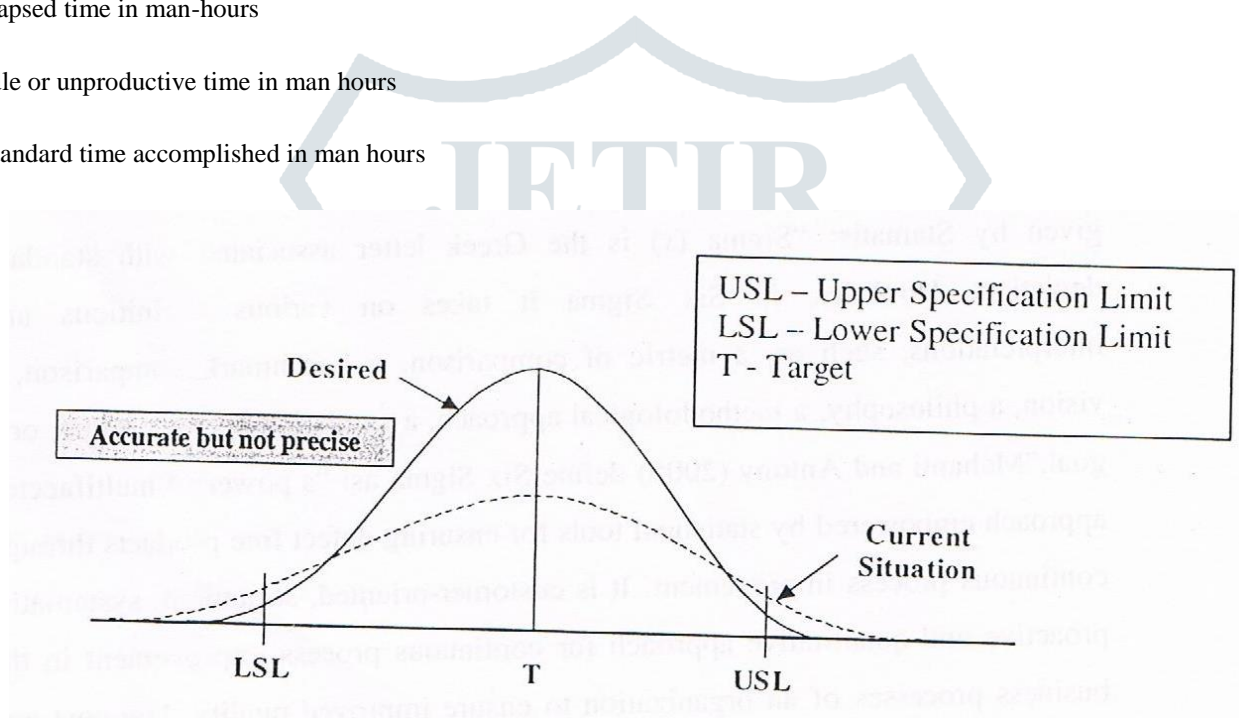


Figure 1.3 shows the defects associated with equicentric and incenting of the main given worth. This type of error is mainly due to attached with the manufacturing and service industry where utilization rate is too high and to deescalate the expenditure rate, management personal has boast to extend a technology and methods for approximation and differentiating, controlled & to make possibilities to reduced mean value outcome that is given.

Sigma level	Percent yield	PPM
6	99.997%	3.4
5	90.98%	233
4	91.4%	6.2510
3	93.3%	68075
2	69.1%	308375
1	30.9%	691442

A Five Phase Six Sigma Methodology :

If we considered as as an undone steps that is not satisfying customers requirements and their needs then using DMAIC (Define, Measure, Analyzed, Improved, Controlling) as made known in figure

Research Plan

This research plan has taken in the view as the proceedings and wipes that has been established to do that is taken and by systematically taken approach. Methodology that is taken in this research is highly precise and accordance with the extensive research and fulfilled the demand for accepted things. As the research methodology is not at the level of sufficiency and comprehensive enough, the solution that comes as a output will not be eligible enough for acceptance. Figure 3.1 Define or shows the stepwise flow chart to depict sequential way under the technological adoption in completing and defining the explore work.

Sr. No.	Name of product	day 1 (no)	3rd day (no.)	4th day after implementation
1	break shoe	8800	9147	9500
2	head light	6500	7900	1000
3	wheels	5000	5700	6800
4	Solenoid Switches	6200	7412	9000
5	gear box	4000	4500	8600
6	clutch	2000	2548	2750
7	fuse	30000	45000	6782

Scope for Future Work:

The usefulness and applicability of Six Sigma in Indian organizations is still in adolescent stage and while the research has followed; it was concluded that the curiosity level among three big industries is very low over the six sigma methodology and this study has proved that the sigma theory can be successfully implemented on small industries . In this view, here is following aspects of for future research:-

- Apart from manufacturing industries which is described above, process sector is very cost effective and includes industries like paper mills, sugar mills, cloth mills scientific tools manufacturing industries etc, in these industries the process of Six Sigma is made to implemented and can also be implemented on the system and its sub system other SME industries such as foundries, sugar mills clothing dying milles and so many types of mills etc. to improve the productivity level and précising level of outcome.
- Methodology of six sigma is also being studied over the other type of industries like healthcare managements and the Parma industries.
- Six Sigma implications has been also studied and researched even over organizations like hospitals, schools, colleges, universities etc.

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